What is a Softswitch?

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Introduction

Simply put, Softswitch is the concept of separating the network hardware from network software. In traditional circuit switched networks, hardware and software is not independent. Circuit switched networks rely on dedicated facilities for inter-connection and are designed primarily for voice communications. The more efficient packet based networks use the Internet Protocol (IP) to efficiently route voice and data over diverse routes and shared facilities.

As much an initiative as it is a concept, the International Softswitch Consortium (ISC) is leading the charge to evolve traditional networks to more efficient and feature rich softswitch networks. To date, the industry has met some success to the extent that the basic components of traditional networks have been de-coupled. The transport portion of telecommunications networks is increasing evolving to utilize the IP. In addition to data transport, this IP backbone is also increasingly the medium for Voice over IP (VoIP) services. An example of the de-coupling initiative is exemplified by special gateway and mediation equipment that is deployed to connect IP based networks to circuit based networks for VoIP.

However, Softswitch is more than simply separating the basic components. In this regard, Intelligent Networks (IN) have not yet been fully de-coupled. This current situation is disappointing to Softswitch proponents who claim that one of the primary benefits of separation of IN components would be to create an open environment for service creation. The notion is that IN would not follow traditional call control models, which are voice oriented and constraining. Instead, new control models would be session-based and support data, voice, and multimedia services equally well.

In an independent but related effort, work is underway within the Internet Engineering Task Force (IETF) to define capabilities for

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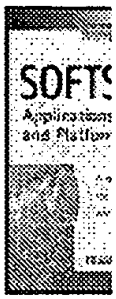
hybrid IN + IP networks. One such hybrid is referred to by the IETF as PINT, which stands for PSTN (Public Switched Telecommunications Network) and Internet Interworking. The motivation for PINT is to allow Internet subscribers to add traditional IN related telephony functions. The idea is to have traditional network capabilities and services accessible and useable by Internet users.

Another hybrid is the converse of PINT. SPIRIT stands for Services in the PSTN/IN Requesting Internet Services. The desire for SPIRIT is to augment IN services with IP capabilities. Therefore, the goal is to make Internet based content and applications accessible and useable by traditional network users.

The efforts of both the ISC and the IETF have the same goal in mind - establish a more distributed telecommunications architecture in which the source of functional components is completely independent. These functional components include transport, switching, network control, and service logic.

For example, one goal is to establish a "Softswitch" that does not have the hard constraints that traditional switches have, including the need for circuit based switching and transport, intelligent network triggers and mechanisms, and service logic. A completely *Softswitch* is one in which these functional entities reside in various distributed physical components. As we mentioned earlier, the transport function has already begun to migrate to IP based network components. However, the future benefit of Softswitch will be dictated by the extent to which network control and service logic also migrate away from the switch.



This distribution of functionality will enable the benefits of improved feature development and delivery as well as lower costs. Distributing functionality means that switches will be simpler, more efficient, and cheaper. Switches will be able to focus on switching, allowing other components to provide network control and service logic. Distributed service logic means that application development will not be constrained to centralized creation, control, and delivery of services. Instead, services can be created and deployed at various places through an extended network.

While providing the potential for many benefits, creating and deploying this model is not without its challenges. Having a vested interested in perpetuating traditional networks, some less-than-forward looking infrastructure providers are hesitant to cooperate with the Softswitch initiative. Additionally, integration of Softswitch with traditional networks will be required as Softswitch deployment will not happen everywhere all at once. A final major concern is that there will be special mediation needs between disparate networks. These needs go beyond mere protocol conversion

requirements and include such things as authentication and authorization of network elements and applications. In traditional networks, well-established processes and protocols such as SS7 handle these mediation functions. These procedures will certainly be more complicated in the hybrid networks of the future.

Despite these challenges, telecommunications technology will continue to evolve for the overall benefit of society. The efforts discussed in this article will play a large role in that development. For more information about these activities see visit the ISC and IETF at www.softswitch.org and www.ietf.org respectively. Hybrid IN/IP networks and the evolution of mobile IN to become more data centric is also discussed in the book ***Wireless Intelligent Networking*** - www.mobilein.com.

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